Feasibility of Using Somatosensory Input on Pediatric Patient Anxiety & Experience in the Dental Clinic

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PURPOSE: Children with dental anxiety may display behaviors (e.g. escape and aggression) that can result in avoidance of dental care and thus deteriorated oral health. The purpose of this study was to explore the feasibility of using deep pressure and vibration to reduce pediatric dental anxiety. The goal was to better understand how to effectively measure dental anxiety and how somatosensory input could improve clinic experiences and outcomes.

DESIGN: This was a feasibility study for children (4-17 years) and decisionally impaired adults at the pediatric dentistry clinic. Inclusion criteria include Frankl Behavioral Score of 2 or 3 and notable history of uncooperative behaviors.

METHOD: Participants rated anxiety and feelings with the Modified Child Dental Anxiety Scale and custom surveys. Caregivers completed a patient history form. Participants wore an Empatica E4 watch to record physiological data. Participants were randomly assigned to control, weight only (W), or weight with vibration (W+V) groups. The vest (2.8 lbs.) had motors to produce subtle vibration when activated. The vest was placed around their neck and chest halfway through the cleaning. At the end of the visit, participants rated how they felt and how the vest affected comfort and anxiety, if applicable.

RESULTS: 29 individuals (4-28 years old, 38% with history of developmental concerns) participated (13 control, 9 W group, 7 W+V group). 81% of W and W+V participants tolerated the vest, and 75% would wear it again. 69% of participants felt the weight of the vest was just right. We saw insignificant changes in heart rate (HR) in the control group, increases in HR in the W group, and decreases in HR in the W+V group.

CONCLUSIONS: Given acceptance of the vest and noted decrease in HR in the W+V group, future study can explore optimal combinations of weight and vibration for different populations. This research highlights the role OTs can play in improving experiences in a pediatric dental clinic.

References

Kakkar, M., Wahi, A., Thakkar, R., Vohra, I., & Shukla, A. K. (2016). Prevalence of dental anxiety in 10-14 years old children and its implications. *Journal of Dental Anesthesia and Pain Medicine, 16*(3), 199. https://doi.org/10.17245/JDAPM.2016.16.3.199

Morgan, A. G., Rodd, H. D., Porritt, J. M., Baker, S. R., Creswell, C., Newton, T., Williams, C., & Marshman, Z. (2017). Children's experiences of dental anxiety. *International Journal of Paediatric Dentistry, 27*(2), 87–97. https://doi.org/10.1111/IPD.12238

Nunez, A. (2018). Exploring Communication Differences: Complications Children with Developmental Disabilities Face in Medical Settings. Association of Child Life Professionals Bulletin, 36(2). https://www.childlife.org/resources/aclp-bulletin/spring-2018-table-of-contents/complications-children-with-developmental-disabilities-face